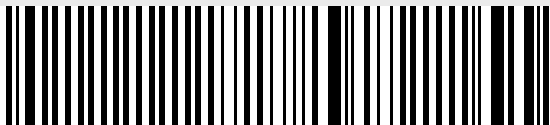
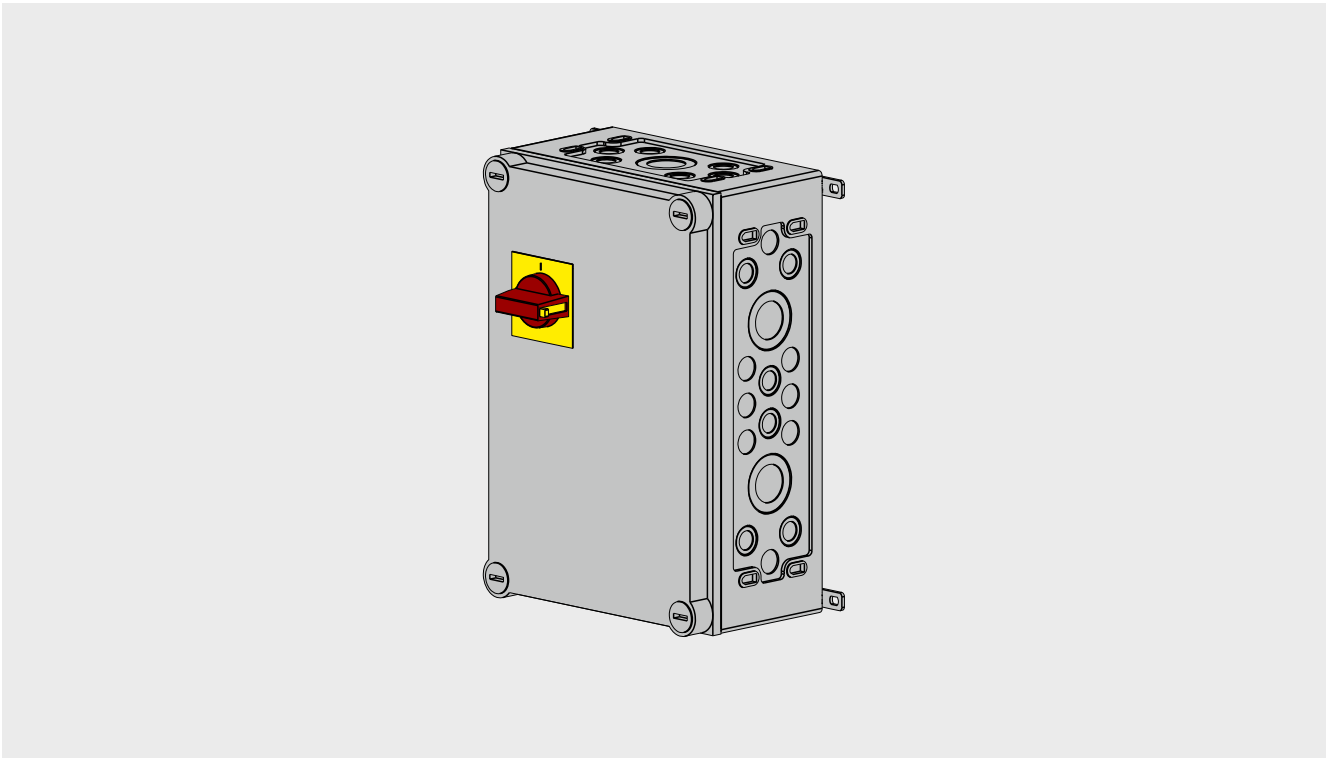




Installation Instructions

Door control - TS 971

ATEX outside Ex-Zone Hold-To-Run-Mode



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Status: a / 08.2023



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1 Safety-relevant chapter

Explanation of symbols

The following symbols are used in these installation instructions:

DANGER

Safety note: Non-compliance will result in death or severe injury.

WARNING

Safety note: Non-compliance can result in death or severe injury.

CAUTION

Safety note: Non-compliance can result in injury.

NOTICE

Note: Non-compliance can result in material damage and impairment of product functionality.

NOTE

Note: Points out useful additional information.

Target audience of these installation instructions

As a user or operator, contact the manufacturer for your door system. These installation instructions are geared towards qualified persons trained in the handling of door systems. Expert knowledge, relevant skills and practical experience are what set apart qualified persons. They are capable of safely carrying out the tasks involving installation, maintenance and modernisation according to the instructions.

A trained electrician must carry out the electrical installation. Trained electricians meet the following requirements:

- They are familiar with the applicable safety and accident prevention regulations.
- They recognise hazards relating to electricity and the door control and take safety precautions.

Intended use

The door control is intended for a power-operated door with a drive unit (GfA mechanical limit switch system). The drive unit must be protected against moisture and aggressive environmental conditions (such as corrosive substances). The drive units are only suitable for indoor use. Appropriate protective measures must be taken for outdoor installation. The drive unit is not intended for hazardous areas. The values specified in the technical data of the drive unit must not be exceeded. The safe operation can only be ensured if used as specified.

Safe operation

The safe operation of the product can only be ensured if it is used as specified. Follow the installation instructions. Observe all specifications, especially warnings, when installing the product in the overall system. GfA is not liable for damage resulting from non-observance of the installation instructions. The resulting overall system must be reassessed for its safety in accordance with applicable standards and directives (e.g. CE marking). These installation instructions refer only to a part of the overall system and are not sufficient as the sole instructions for the overall system. The installer of the system must prepare the instructions for the overall system. We recommend entering the danger area of the system only when the drive unit is at a standstill.

General safety instructions

⚠ WARNING

Failure to follow these installation instructions may result in severe injury or death.

- Please read these instructions before using the product.
- Keep these instructions handy.
- Include these instructions when passing on the product to third parties.

⚠ WARNING

Danger from improper use of the product!

- Do not let children operate the product unsupervised or use as a toy.

⚠ WARNING

Danger to life from incorrect installation!

Work carried out improperly may result in death or severe injury from electrical current or falling parts

- Allow only competent people to carry out the work.
- Disconnect all cables from the power supply.
- Observe valid regulations and standards.
- Use suitable tools.

2 Storage

Store the product in the original packaging.

Note the following environmental conditions for storage:

- Closed, dry, dark and vibration-free rooms
- Temperatures between +5 °C and +40 °C
- Relative humidity less than 93 %, non-condensing
- Dust protected
- Protected against corrosion (e.g. protection against saltwater)
- Protected against chemicals

3 Transport

Avoid bumps, impacts and vibrations during transport. Do not throw the product.

4 Product overview

Technical data

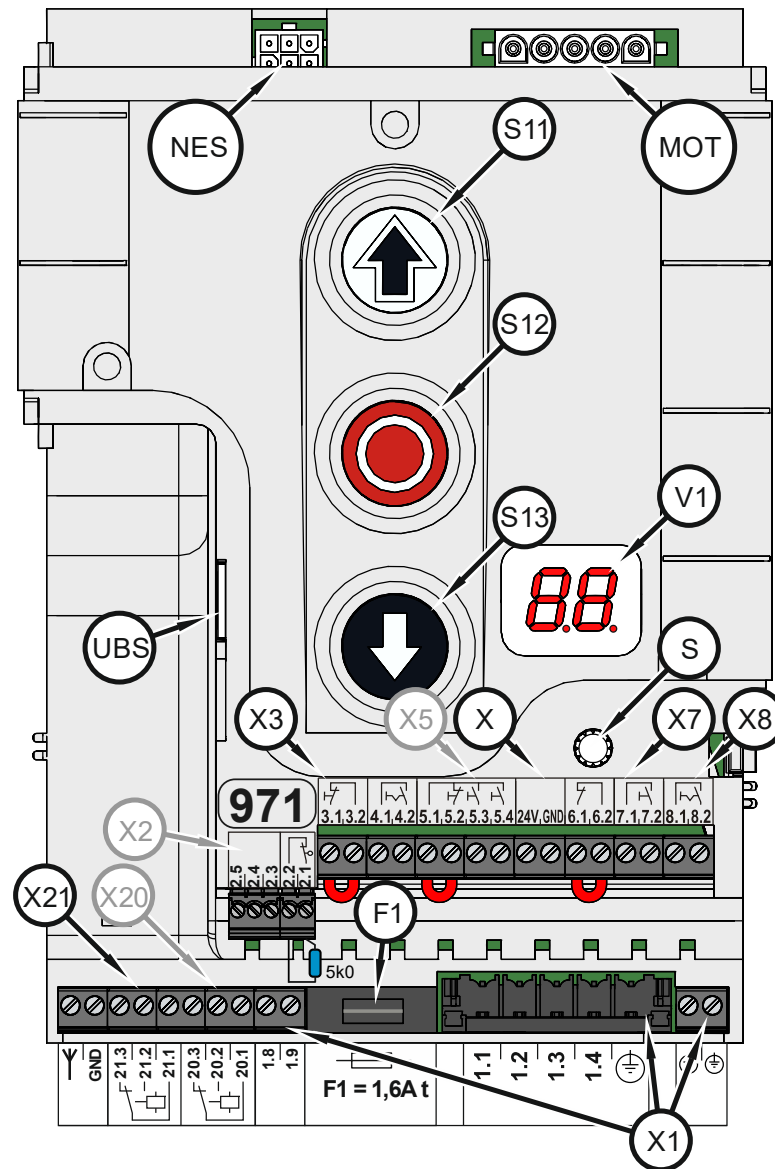
Designation		Expression
Dimensions (B x H x T)		250 x 375 x 188
Weight		5.7 kg
Operating frequency		50 Hz
Supply voltage		3 N~220-400 V, PE 3~220-400 V, PE
Output power for drive unit, maximum		3 kW
Temperature range	Operation	-10 °C - +50 °C
	Storing	0 °C - +50 °C
Air humidity, non-condensing		max. 80 %
Place of use		outside EX zone
Housing cover		transparent
Installation		vertical
Motor protection switch		0,9 A – 1,25 A / 2,2 A – 3,2 A / 1 A – 4 A
Internal electronic protection		350 mA
Power consumption door control		18 W
Protection class	Housing	IP65
Protection per phase, on-site		10 A - 16 A
External mains supply:		24 V DC
External mains supply: X1.8 / X1.9		1 N~230 V
Protection via F1 micro-fuse		1,6 A time-lag
Relay contacts		2 potential-free changeover
Loading of relay contacts,	ohmic	230 V AC, 1 A
	inductive	24 V DC, 0,4 A
Compatible GfA - limit switch		Mechanical limit switch (NES)

Components

Q2 Motor protection switch

Motors for use in potentially explosive atmospheres (Ex) require protection against overload and short circuit. Overload protection is provided by a built-in motor protection switch (Q2). The motor protection switch is suitable for Ex-d/Ex-de and Ex-e motors. The protection is current-dependent and becomes effective when the motor is blocked. Only manual reset is permissible. The setting value of the overload device must correspond to the rated motor current. For Ex-e motors, it must be ensured that the motor is disconnected from the mains within the warming period t_E . The actual tripping time t_A at relative operating current I_A / I_N must be determined using the tripping characteristic of the motor protection switch. It must be ensured that $t_A < t_E$ is given.

Overview display TS 971



NES	NES limit switch socket (Connection using terminal block X2)	X	24 V mains supply, external devices
F1	Micro-fuse 1.6 A time-lag	X1	Mains supply (Connection using terminal block X1)
MOT	Motor socket (Connection using terminal block X1)	X2	Door safety switch
S	Selector switch	X3	Emergency STOP control device
S11	OPEN push-button	X5	Control device, external three push-button (Connection using terminal block X2)
S12	STOP push-button	X7	Pull switch
S13	CLOSE push-button	X8	Intermediate open On/Off
UBS	Socket for universal command sensor system	X20	Potential-free relay contact 1 (Occupied by terminal block X1)
V1	Display	X21	Potential-free relay contact 2

Movement command display

The movement commands appear on the display when the door control receives OPEN, CLOSE or STOP commands.

Display	Description
E.	Display alternates between E. and number:
1.1	OPEN command received.
1.2	STOP command received.
1.3	CLOSE command received.

5 Mechanical installation

NOTICE

Damage to components due to extreme environmental conditions!

Extreme environmental conditions (humidity, chemical substances) at the installation site may damage the product.

- Install the product indoors only. Installed outdoors, the product must be enclosed to provide the same conditions as in an indoor environment. Ensure that the installed connection cables are protected.
- Protect the product from moisture.
- Maintain the temperature range and the maximum humidity during operation.

⚠ WARNING

Danger of shearing, crushing or being drawn in!

In operating mode hold-to-run, people or objects in the path are not detected.

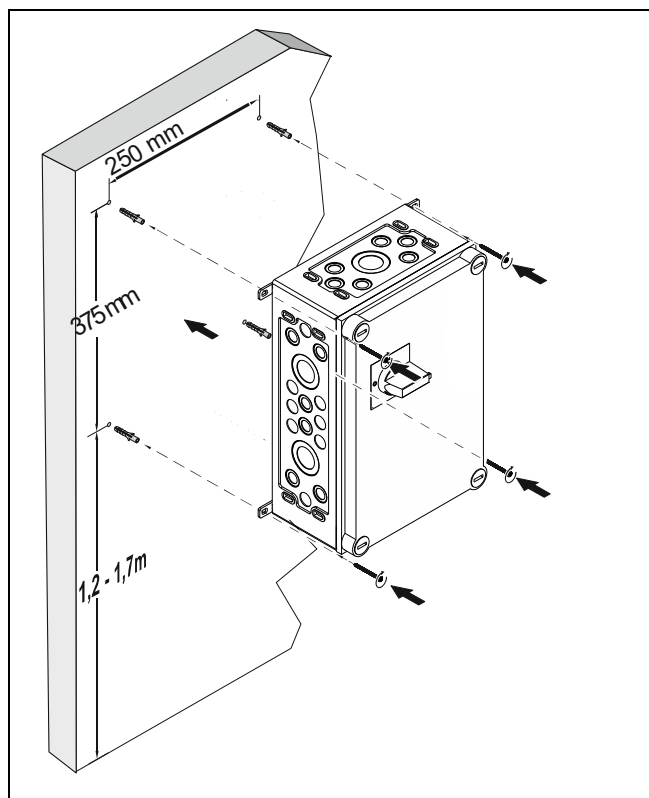
The operation of the door without a line of sight leads to dangerous situations for other people.

- Mount the door control in a position with a clear view of the door.
- Operate the door in operating mode hold-to-run with a clear view of the door.

Mounting

The permissible loads on walls, mountings, connection and transmission elements must not be exceeded.

- Mount the door control through the 4 elongated holes.



6 Electrical installation

⚠ WARNING

Danger to life from electric shock!

Improper wiring may result in severe or fatal injury from electrical current.

- Allow only qualified electricians to carry out the work.
- Disconnect all cables from the power supply.
- Secure the mains disconnecter against plugging in or switching it on again.
- Observe valid regulations and standards.
- Use suitable tools.

⚠ WARNING

Mortal danger due to inadequate fuse!

Without the correct on-site backup fuse and mains disconnecter, there is a risk of fatal or severe injury from electrical current.

- Carry out the connection to the indoor installation using an all-pole disconnecter unit of ≥ 10 A as per EN 12453 (e.g. CEE plug connection, main switch).
- Use a Type B residual current circuit breaker for a drive unit with a 3-phase frequency inverter.

Proof of intrinsic safety

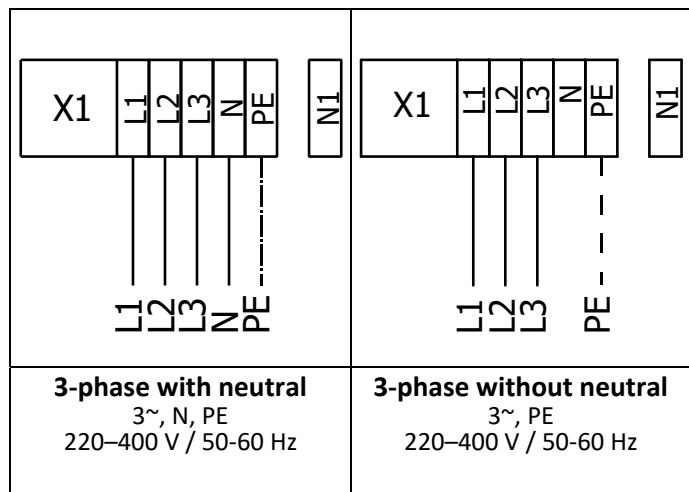
Create proof of intrinsic safety for the following electric currents:

- Safety edge with resistor of 8k2 Ohm, spiral cable and connection cable
- Pass-door and slack-rope switch with connection cable
- Photo cell with connection cable

The erection regulations DIN EN 60079-14 [1] require a proof of intrinsic safety for intrinsically safe current circuits. For technical data of equipment N1, N2 and A2, please refer to the technical data sheets by the manufacturers.

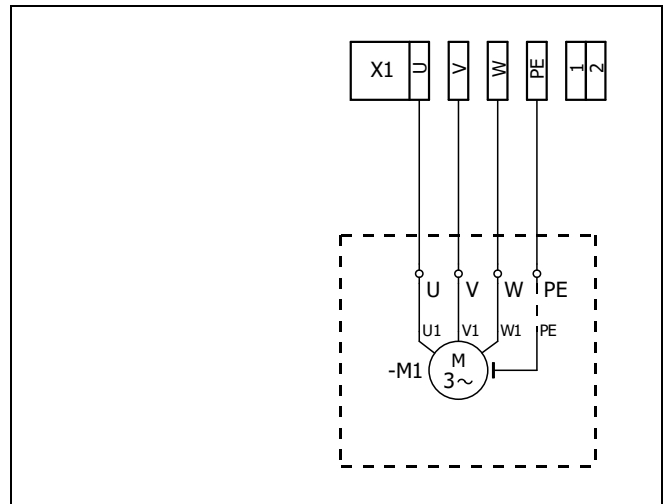
Mains supply

The door control is intended for three-phase drives with a mains voltage of 3 ~ 230 V and 3 ~ 400 V. Before connecting, check whether a clockwise rotating field is present at the installation site. If not, create a clockwise rotating field.



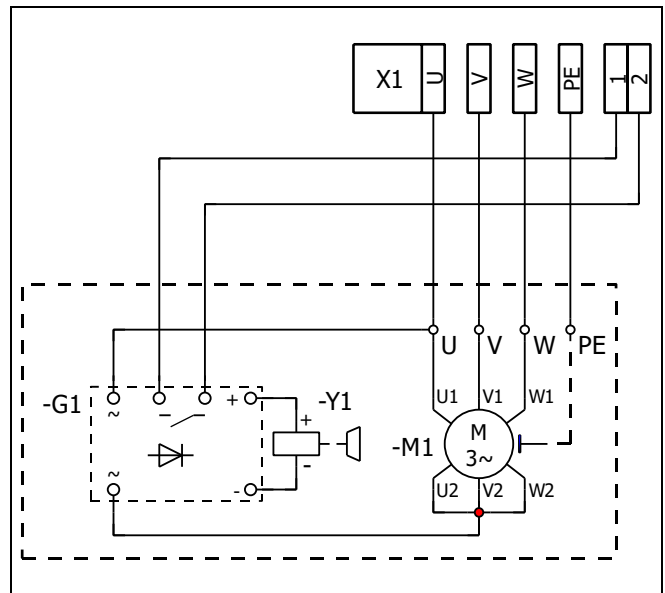
Motor connection

3x 400 V without brake



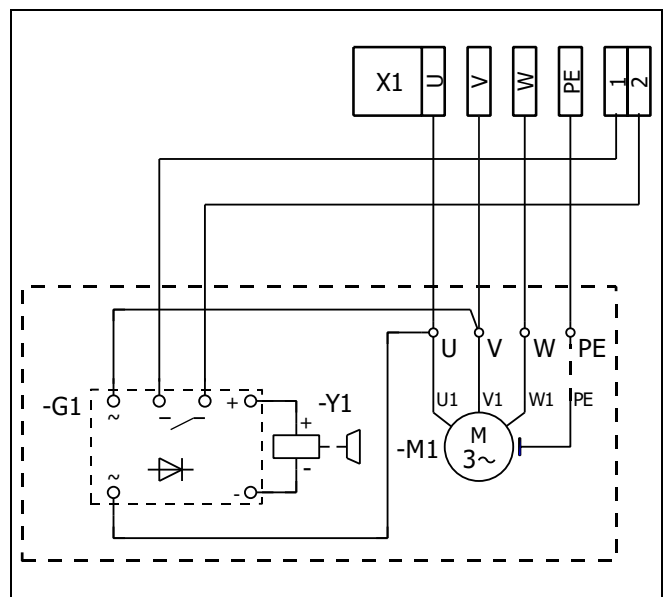
3x 400 V with brake

- Set menu item 2.7 to 1.2 (Brake control)



3x 230 V with brake

- Set menu item 2.7 to 1.2 (Brake control)



Adjust motor protection switch

Adjust motor protection switch. Make sure the values equal the following table:

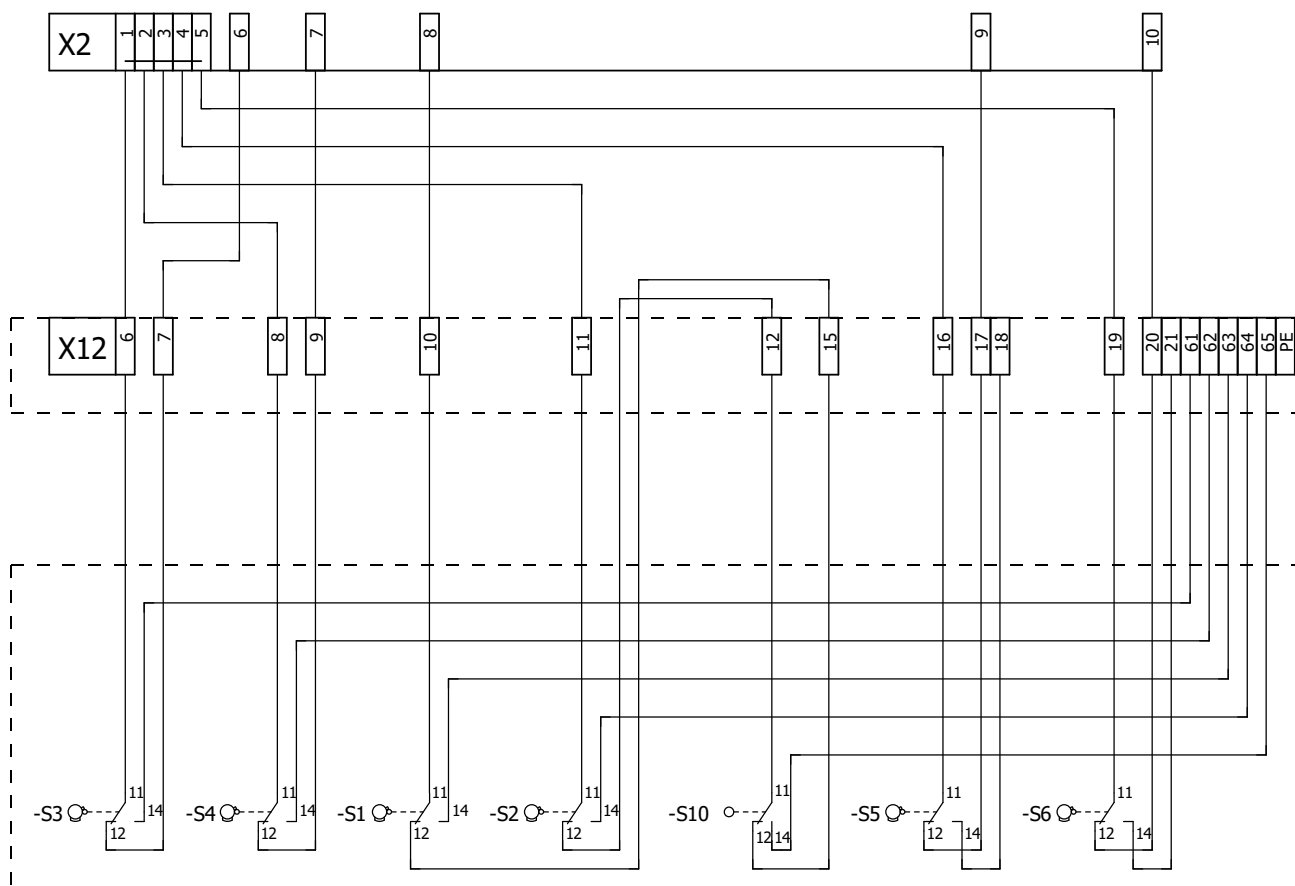
M1 [kW]	U [V]	Q2 [A]	Q2-Type	Setting value [A]
0,37 (without brake)	380–440	0,9–1,25	3RV2011-0KA10	0,95
0,37 (with brake)	380–440	0,9–1,25	3RV2011-0KA10	1,10
0,75	380–440	1,0–4,0	PKE12/XTU-4	2,00
1,10	380–440	1,0–4,0	PKE12/XTU-4	2,70

NOTICE

Damage due to moisture or penetrating foreign bodies

- Check that all cable glands are tight.
- Seal open and unused cable entries with blanking plugs. This will prevent moisture or foreign bodies such as insects from penetrating.

Limit switch connection



Limit switch			
	Description	X2	X12
S1	Emergency limit switch OPEN	8	10, 15
S2	Emergency limit switch CLOSE	3	11, 12
S3	OPEN limit switch	1, 6	
S4	CLOSE limit switch	2, 7	
S5	Auxiliary limit switch	4, 9	
S6	Auxiliary limit switch	5, 10	
S10	Emergency manual operation contact		12, 15
X12	Terminal box on the ELEKTROMATEN		
X2	Terminal strip on the door control		

7 Connecting external devices

⚠ WARNING

Danger to life from electric shock!

Improper wiring may result in severe or fatal injury from electrical current.

- Allow only qualified electricians to carry out the work.
- Disconnect all cables from the power supply.
- Secure the mains disconnecter against plugging in or switching it on again.
- Observe valid regulations and standards.
- Use suitable tools.
- Check the insulation of cables and make sure that cables outdoors are protected.

i NOTE

The inputs of the following safety devices of the control are rated Performance Level c (PLc):

- Slack-rope switch
- Pass-door switch
- Safety edge
- Limit switch system
- Safety circuit of the drive unit
- Emergency STOP control device

i NOTE

Connect only sensors that comply with the current EN 12453 and are suitable for Performance Level c.

X2 - Door safety switch

You can connect a door safety switch for a pass door or slack-rope switch to terminals X2.1/2.2. The door safety switches are connected to a safety circuit with Performance Level c (PLc) according to ISO 13849-1. The safety circuit requires an overall terminal resistance of 5k Ω for line cross-circuit monitoring.

Examples of door safety switches are shown below. Connect your product accordingly.

Mount the product according to the manufacturer's instructions.

i NOTE

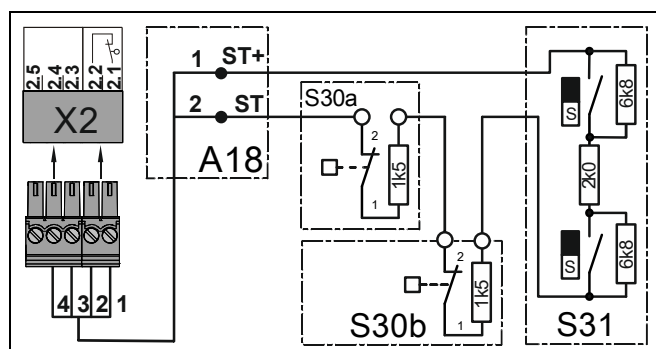
- When activated while the door is moving, the door stops and fault indication *F.l.2* appears.
- When the switch fails, fault indication *F.l.7* is displayed.
- In the case of a line cross-circuit, fault indication *F.l.B* is displayed.

Slack-rope switch / electronic pass-door switch

The evaluation of the door control provides for the connection of two slack-rope switches.

Resistance for line cross-circuit monitoring when using slack rope switches: 1k Ω

Resistance for line cross-circuit monitoring when using electronic pass-door switches: 2k Ω



A18	Connection socket
ST+	Voltage supply (12 V)
ST	Input for door safety switch
S30a/b	Slack-rope switch (NC contact)
S31	Electronic pass-door switch

i NOTE

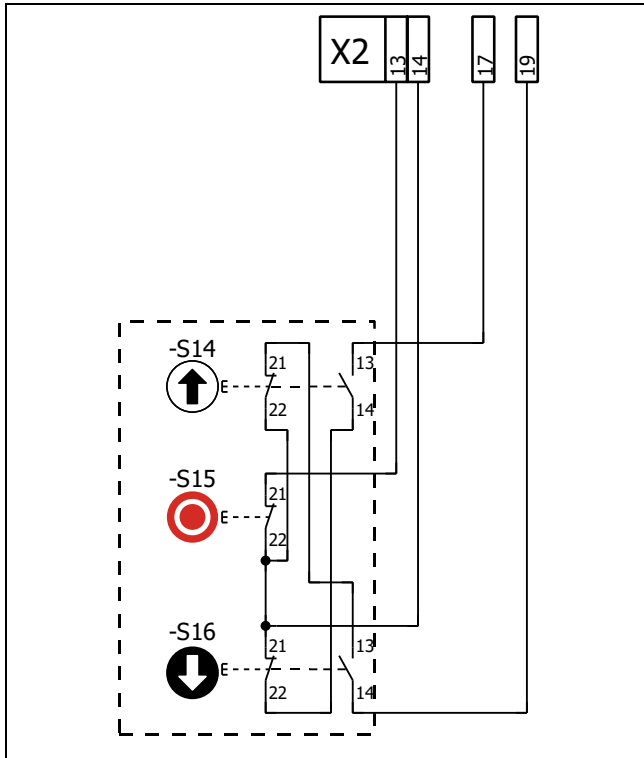
- Use a slack rope switch suitable for explosive zones.

External command devices: X2 terminal block

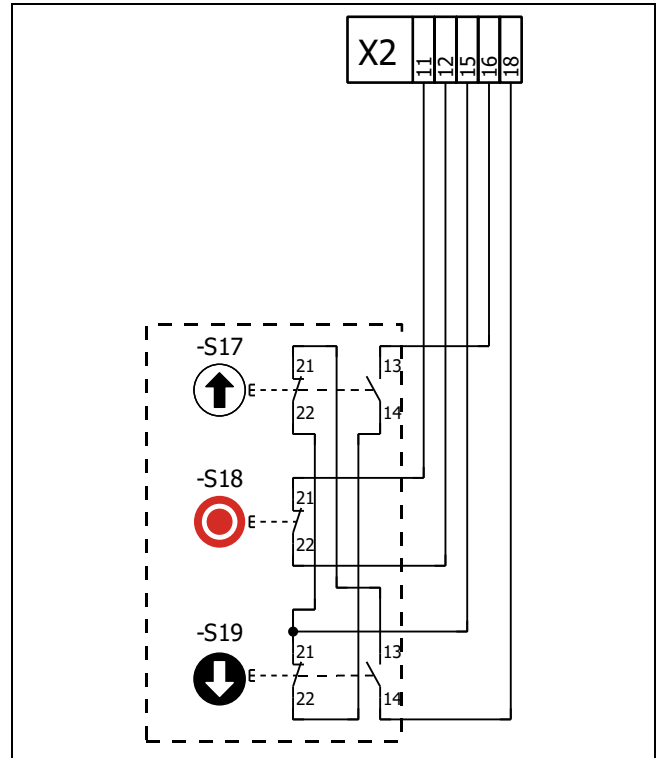
The Ex version of TS971 includes an X2 terminal block. The terminal block occupies the limit switch connection and terminal X5.

- Connect the Ex terminal box of your door drive unit to X2. Details of the assembly instructions and wiring diagrams of your door drive unit can be found at the end of this document.
- Connect external command devices to X2.

External control device Exde Ilc T6



Control device 1 Exde Ilc T6



Control device 2 Exde Ilc T6

i NOTE

The control device loses its function when faults occur on the safety edge, light curtain or photocell.

i NOTE

If you connect a control device without a STOP button to terminals X5, you need to install a jumper between X2.11 to X2.12 and X2.13 to X2.14.

⚠ WARNING

Danger due to unattended door movement!

The safety devices are deactivated in operating mode hold-to-run. People or objects in the movement path are not detected.

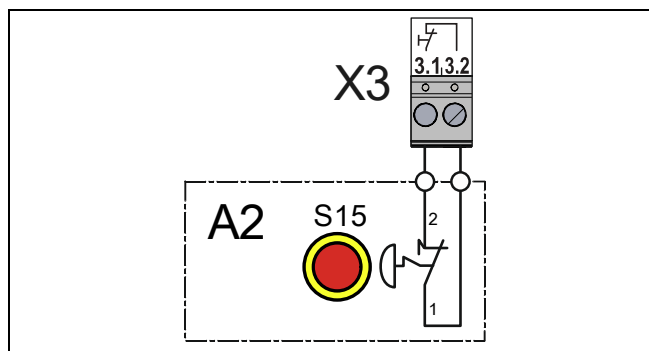
- Install and operate the control device only with a clear view of the door.

X3 - emergency stop switch

The emergency stop command device is connected to a safety circuit with Performance Level c (Plc) according to ISO 13849-1.

Alternatively, an emergency stop command device according to EN 13850 or an evaluation unit for a safety device against entrapment can be connected.

- Terminal X3 is located directly on the door control.
- Mount the product according to the manufacturer's instructions.



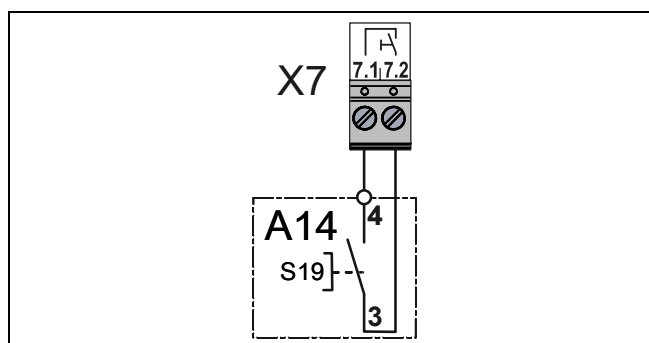
i NOTE

When the emergency stop switch is actuated, fault message F 1.4 appears.

X7 - Pull switch

You can connect a pull switch to terminals X7.1/X7.2. The switching contact must be potential-free.

- Terminal X7 is located directly on the door control.
- Install the product according to the manufacturer's instructions.
- Activate the product after completion of the electrical installation with menu item 2.5.

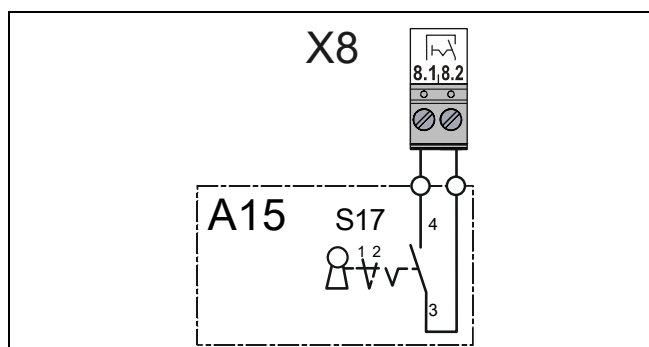


X8 - Switch for intermediate open

You can connect a switch for the intermediate open of the door to terminals X8.1 / X8.2.

The switch activates this function. With an OPEN command, the door moves to the saved door position. Only when you deactivate this function with the switch, the door will return to the final limit position OPEN.

- Terminal X8 is located directly on the door control.
- Mount the product according to the manufacturer's instructions.
- Set the intermediate open position with an auxiliary limit switch.



i NOTE

Use menu item 2.9 to specify the command devices for moving to intermediate open.

X20 / X21 - relay contact for the brake / relay contact for the relay contact for a traffic-light

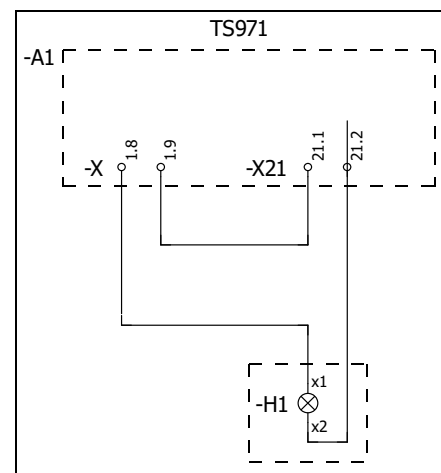
Terminal X20 leads to terminal block X1 intended for the supply of brakes. X21 is intended for external devices such as traffic lights. X20 and X21 are potential-free relay contacts.

- Connect brakes to terminal block X1.
- Install the brake according to the manufacturer's instructions. Follow the connection diagrams under "Motor connection" in these assembly instructions.
- Connect a traffic light to X21 as shown.
- Activate the traffic light after completing the electrical assembly with menu item P 2.8.

NOTICE

Damage to components!

The maximum current at 230 V AC is 1 A and at 24 V DC 0.4 A. Exceeding these values may lead to the malfunctioning of the devices.



Red traffic light
Neutral (N) is required.

i NOTE

We recommend using LED traffic lights with 230 V.

8 Setting the final limit positions

NES (mechanical limit switch)

Refer to the ELEKTROMATEN manual to set the final limit positions.

9 Programming

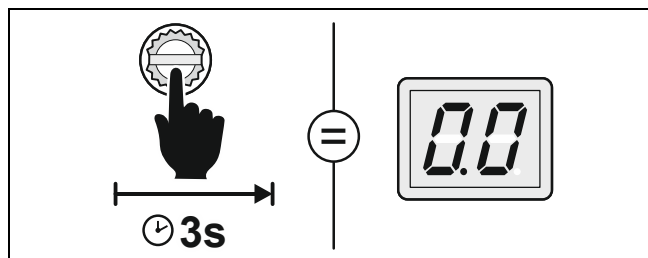
i NOTE

Before you can start programming, you must have set the final limit positions.

Programming the door control

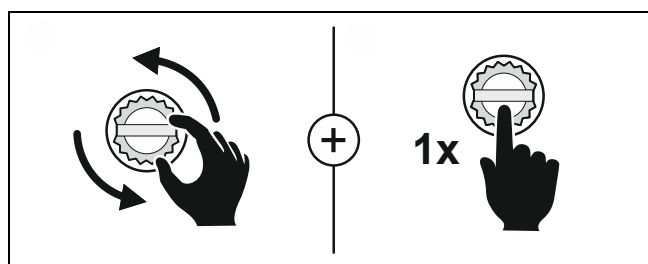
1. Start programming:

- Press the selector switch for 3 seconds. The display changes to 0.0.



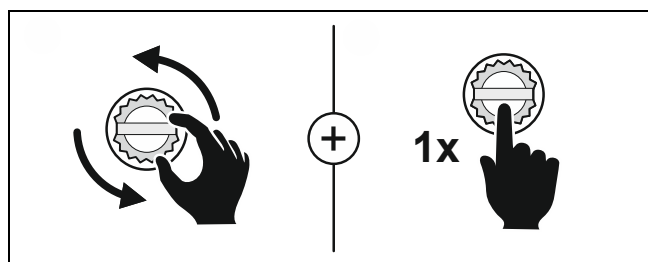
2. Select the menu item:

- Turn the selector switch to the desired menu item.
- Press the selector switch once to confirm the selection. This will take you to the options.



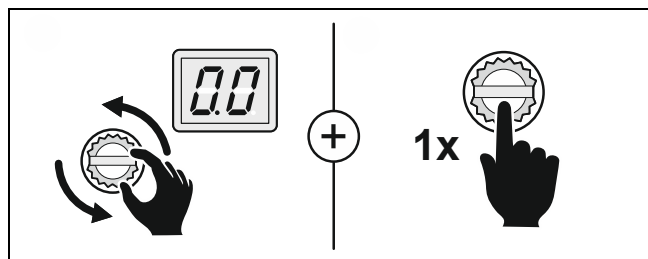
3. Selecting options:

- Turn the selector switch to the desired option.
- Press the selector switch once to save the selection. You will leave the options at the same time.



4. Terminate programming:

- Turn the selector switch to 0.0.
- Press the selector switch once to exit programming.



Explanation of the programming tables

1	0.3	2	Auswahl Sicherheitseinrichtungen
3	1		Spiralkabel oder WSD
4	2		Lichtgitter (nur für Lichtgitter mit OSE-Ausgang)
5	3		Parallelbetrieb von Lichtgitter und WSD (Betrieb einer Sicherheitsschaltleiste an WSD nicht)

- Number of the menu item
- Name of the menu item
- Symbol for the factory setting
- Number of the option
- Name / description of the option

Menu items:

P 0.1 - Operating mode

With this menu item, you select the operating mode for moving the door during OPEN operation and CLOSE operation.

When selecting the option, note the following:

- the number of safety devices and safety edges at the door.
- the optional connection of a command device.

▲ WARNING

Danger due to unattended door movement!

The safety devices are deactivated in operating mode hold-to-run. People or objects in the movement path are not detected.

- Operate the door only with a clear view of the door.
- Options .5, provide additional safety; the safety devices remain active despite operating mode hold-to-run.

0.1	Operating mode
▶ .1	No safety device on door: hold-to-run OPEN/CLOSE
.2	No safety device on door: self-hold OPEN and hold-to-run CLOSE
.5	One safety edge on door: hold-to-run OPEN/CLOSE. The safety edge is active during movement.

P 0.2 - Output rotating direction

Use this menu item to change the output rotation direction of the door drive unit.

0.2	Output rotating direction
	Select the options with the OPEN or CLOSE button
.0	Maintaining the output rotation direction. Exit the menu item by pressing the selector switch.
.1	Changing the output rotating direction. Save and exit the menu item by pressing the STOP button for 3 seconds .

P 2.6 - Pull switch

- First, connect a radio to terminals X7.

Use this menu item to select how the door responds to a command from the pull switch button.

i NOTE

If you activate option **.3** and automatic closing **2.3**, the door closes after the time set in **2.3** when you press the pushbutton.

2.6	Pull switch
▶.1	Activation in final limit position OPEN or intermediate open: door moves in final limit position CLOSE Activation in final limit position CLOSE or other: door moves in final limit position OPEN
.2	Activation in final limit position CLOSE or intermediate open: door moves in final limit position OPEN Activation in final limit position OPEN or intermediate open: door moves in final limit position CLOSE Further activation during movement take place in the following order: OPEN-operation - STOP - CLOSE-operation - STOP - OPEN-operation
.3	Activation from all positions: door moves in final limit position OPEN

P 2.7/2.8 - Relay functions o X20/ X21

With menu item P 2.7, you control the function of X20 and with P 2.8 the function of X21. P 2.7 is intended the brake control. Terminals X20/X21 are potential-free relay contacts.

2.7 Relay function on X20	
1.2	Brake control Active during operation Inactive at stop
2.8 Relay function on X21	
▶ .0	Off.
.1	Impulse for OPEN operation at the switching position for 1 second Switching position requires teach-in with P 1.7 / P 1.8.
.2	Permanent contact from the switching position on Switching position requires teach-in with P 1.7 / P 1.8.
.3	Red light: permanent contact during door movement In final limit position OPEN: flashing for 3 seconds In final limit position CLOSE: flashing for 3 seconds
.4	Red light: permanent contact during door movement In final limit position OPEN: flashing for 3 seconds In final limit position CLOSE: off
.5	Flashing light: during door movement: permanent contact In final limit position OPEN: lights up for 3 seconds In final limit position CLOSE: lights up for 3 seconds
.6	Flashing light: during door movement: permanent contact In final limit position OPEN: lights up for 3 seconds In final limit position CLOSE: off
.7	Green light: during door movement: off In final limit position OPEN: permanent contact In final limit position CLOSE: off Instead of green light, for example: usable for the clearance of a dock leveller.
.8	In final limit position CLOSE: permanent contact
1.0	Impulse of 1 second with OPEN command
1.1	Impulse when switching position is exceeded. Permanent contact when stopping in the switching position. Switching position requires teach-in with P 1.7.
1.2	Brake control Active during operation Inactive at stop
1.4	Light curtain test, etc. Test before each CLOSE operation
1.5	Operating status display (delay of 20 seconds)
1.6	Operating status display

Operating status display

If you set options *l5* or *l6*, the relay contact switches in the case of a fault, power failure or permanent OPEN / STOP / CLOSE command. With these options, the relay contacts are permanently energised and de-energised when errors or power failures occur. An external device displays a status indication.

- Option *l5*: the status message is delayed by 20 seconds. When the fault disappears before the time has elapsed, the relay does not switch. There is no delay for faults *3.6*, *5.6* and *5.7* or in the case of a power failure.
- Option *l6*: the relay switches without delay.

P 2.9 - Specifying control device for intermediate open

Use this menu item to specify the control devices for approaching intermediate open. You must first set a position for intermediate open with menu item *l6*. To switch intermediate open off and on, a switch must be installed on X8.

You can connect further control devices for intermediate open to X7 or X5. If an OPEN command is issued using the activated control devices, the door moves into intermediate open.

2.9	Specifying control device for intermediate open
▶ .1	Intermediate open is possible with all control devices.
.2	Intermediate open using a control device on X7. Final limit position OPEN with OPEN button of the door control and control device on X5.
.3	Intermediate open with OPEN button of the door control and control device on X5. Final limit position OPEN with control device on X7.

i NOTE

For options *.2* and *.3*, an OPEN command has priority over an intermediate open command, regardless of the order in which the commands were executed.

P 3.3 - Travel time monitoring

This function is only available for ELEKTROMATEN with mechanical limit switches. The set travel time is automatically compared with the time measured between the final limit positions. When exceeding the running time, fault indication *F 5.6* appears. The fault indication is reset by closing the door.

3.3	Travel time monitoring
.0	Off
.1 - 9.0	1 to 90 seconds ▶ Factory setting to 90 seconds

i NOTE

Recommended setting: travel time + 7 seconds

P 3.4 - door safety switch

The door safety switch is connected to input X2.2. Use a slack rope switch suitable for explosive zones.

3.4	Door safety switch
▶.1	Slack-rope switch

P 8.5 - Setting the maintenance cycle counter

With these menu items, you set a reminder for the maintenance of the door. The maintenance cycle can be set between 1,000 and 99,000 cycles. The counter decreases by 1 every time the door reaches the final limit position OPEN. When the counter reaches the value 0, the setting from menu item 8.5 is activated.

8.5	Setting the maintenance cycle counter
▶.0	Deactivated.
.1 - 9.9	Activated. Counting down from .1 = 1,000 cycles to 9.9 = 99,000 cycles.

P 8.6 - Response after expiry of the maintenance cycle counter

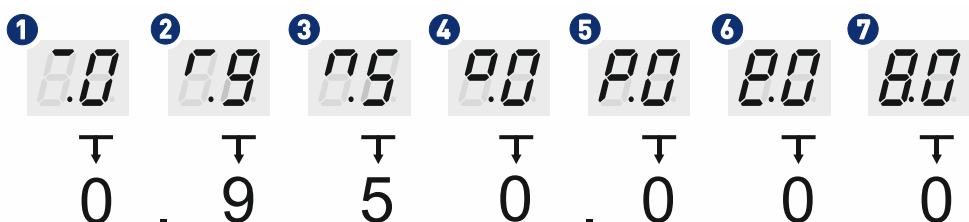
8.6	Response after expiry of the maintenance cycle counter
▶.1	Display shows C.5 alternating with the value specified in 8.5
.2	Operating mode change to hold-to-run. Display shows C.5. alternating with the value specified in 8.5.
.3	Operating mode change to hold-to-run. Display shows C.S. alternating with the value specified in 8.5. Option: Press the STOP button for 3 seconds to ignore the message for 500 cycles.
.4	Display shows C.5. alternating with the value specified in 8.5. Relay contact X21 switches.

i NOTE

You can delete the response from menu item 8.6 by setting a new value with menu item 8.5.

P 9.1 - Readout of cycle counter

With this menu item, you can read out the cycle counter of the door control. The counter increases by 1 every time the door reaches the final limit position OPEN. It is not possible to reset the cycle counter.

9.1	Readout of cycle counter
	After selecting the menu item, the display changes 7 times to show a 7-digit number. The left side of the two-digit display shows a symbol for the current position of cycle counter. The right side shows the number of the current position. The example below shows 950.000 cycles.
	

P 9.2 - Readout of fault indications

With this menu item, you can read out the last 6 fault indications of the door control. After selecting the menu item, the display changes and shows the last six fault indications. First an *F* is shown, then the number of the fault indication. The first fault indication displayed is the most recent.

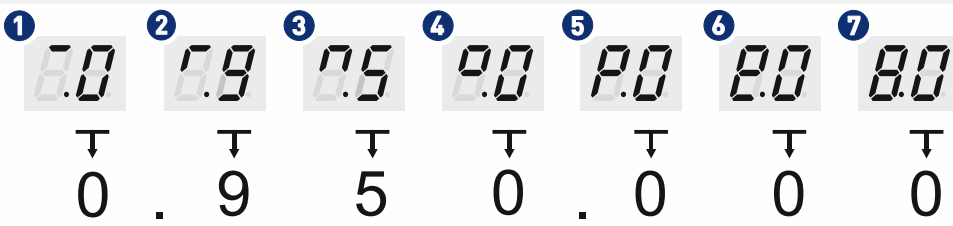
9.2	Readout of fault indications
	The display changes and shows the last 6 fault indications.

i NOTE

An error that occurs several times in a row is only saved once as long as no other error has occurred in the meantime.

P 9.3 - Readout of the cycle counter since last programming change

This menu item shows the number of cycles the door has run since the last programming change. The counter increases by 1 every time the door reaches the final limit position OPEN.

9.3	Readout of the cycle counter since last programming change
	After selecting the menu item, the display changes 7 times to show a 7-digit number. The left side of the two-digit display shows a symbol for the current position of cycle counter. The right side shows the number of the current position. The example below shows 950.000 cycles.
	
▶ .1	Cycle counter of the last change in programming
.2	Number of activations of slack-rope, pass-door and crash switch

P 9.4 - Readout software version

This menu item displays the software version of the door control. For drive units with GfA frequency inverter, the software version of the motor is shown as well.

9.4	Readout software version
	The display changes and shows the number of the software version.

P 9.5 - Reset to factory settings / use of GfA-Stick

Activate the GfA-Stick with option .0 The GfA-Stick (part no. 20003696) allows readout of faults, operations, and programming by using the GfA App. With option .1, you delete all set menu items and reset the door control to factory setting.

9.5	Reset to factory settings / use of GfA-Stick
.0	Activate GfA-Stick.
.1	Reset to factory settings. <ul style="list-style-type: none"> ▪ Press the OPEN Button once to select menu item . 1. ▪ Confirm your selection by pressing the STOP Button for 3 seconds.

10 Fault correction

i NOTE

You can find detailed information on faults and how to rectify them in our fault guide for door controls.

- Download the fault guide from the GfA-Portal.
- Start the fault guide using the GfA+ app.

Emergency operation

⚠ WARNING

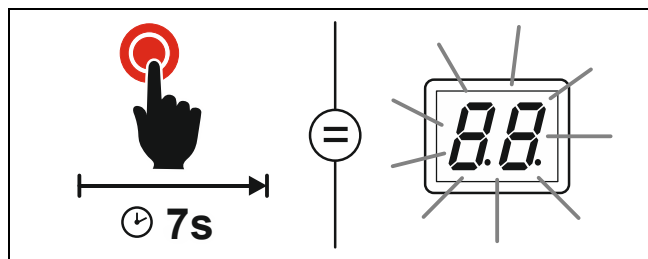
Danger from uncontrolled movements or falling parts!

In emergency operations, all safety devices are bypassed. People in the closing area may be injured.

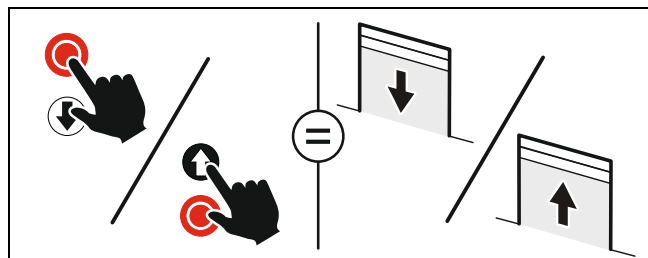
- Check the door for damage beforehand.
- Block the door to pedestrians and vehicles.
- Ensure a clear view of the door from the operator's location.

Emergency operation enables faults in the safety devices to be bypassed. This allows the door to be moved to a position required for repair. For safety reasons, the door cannot be moved when fault indications $F\ 1.3$ and $F\ 1.4$ are displayed.

- Press and hold the STOP button.
- Emergency operation is active after 7 seconds represented by a flashing display.
- Keep the STOP button pressed.



- Press the OPEN or CLOSE button in addition to the STOP button.
- The door can now be moved in hold-to-run mode.



Fault indications

Door control is off / display is dark

	Possible causes	Fault correction
Display is dark / door control is without function	No input function	Measure the input voltage.
	Overload	Check whether too many electrical loads are connected to the control circuit (24 V).
	Short circuit	Check whether a faulty device is connected to the control circuit (24 V).
	Water damage	Check if water has entered the control box.
	A different defect	Disconnect all lines (delivery status). Replace the door control if the display stays dark.

Fault in the safety circuit

	Cause of the fault	Fault correction
<i>F.</i>	Display alternates between <i>F</i> and number	
<i>1.2</i>	Slack-rope switch / pass-door contact is open.	<p>Check the connecting cables for breaks.</p> <p>Check whether the spiral cable or WSD door module is connected correctly.</p> <p>Slack-rope switch: check if the ropes are taut.</p> <p>Check the DIP switch position in the door leaf box.</p> <p>Measure the slack-rope switch / pass-door contact.</p>
<i>1.3</i>	<p>Safety circuit is open.</p> <p>Emergency manual operation is activated.</p> <p>Thermal protection of the motor has tripped.</p> <p>The restart protection has tripped.</p>	<p>Check the door drive unit for overload or stalling</p> <p>WARNING! Danger of the door dropping! Do not release stalling when using a door drive unit with a safety brake! Stalling may indicate a catch incident. Replace the door drive unit.</p> <p>Allow the door drive unit to cool.</p> <p>Check manual emergency operation.</p> <p>Check plugs and terminals for firm seating.</p> <p>Doors with separate safety brake: check the safety brakes.</p>
<i>1.4</i>	The emergency stop button is pressed.	<p>Check Emergency stop switch.</p> <p>Check connection cable for disconnection.</p>

	Cause of the fault	Fault correction
F.	Display alternates between F and number	
1.5	The radio transmission of WSD door-module is not working. (TS 971)	<p>Follow the instructions for the WSD door module</p> <p>Radio channel assigned twice: Use menu item 9.5 to read out the radio channel. Use menu item 2.7 to manually assign the radio channels.</p> <p>Moisture in WSD door-module: Replace WSD door-module and use a splash guard (optional equipment).</p> <p>Obstacle between WSD door-module and door control: Adapt the fitting configuration or use a spiral cable.</p> <p>Battery voltage is too low: Read out the voltage using menu item 9.5 and replace the battery if it is less than 3.2 V</p> <p>Red LED in WSD door-module: Press P1 push-button. Flashing: Faulty radio connection Lit: Radio connection OK</p>
1.7	Slack-rope / or pass-door contact is faulty.	<p>Open and close pass door. Check the pass-door installation.</p> <p>Set the switching distance to <4 mm.</p> <p>Check the DIP switch position in the door leaf box.</p> <p>Check the resistance and wiring of the spiral cable.</p> <p>Check the control voltage for overload.</p>
1.8	Line cross-circuit in the slack-rope / pass-door circuit	<p>Check the DIP switch position in the door leaf box.</p> <p>Check whether the 5K0 resistor is installed in the door leaf box.</p> <p>Check whether the 5K0 resistor in the door leaf box is connected in series.</p> <p>Check the wiring of the spiral cable.</p>
1.9	The voltage of the batteries in the WSD door module is too low The battery voltage is below 3.2 V.	<p>Replace the batteries of the WSD door-module.</p> <p>Check if the battery is passivated. Depassivate the battery. Follow the assembly instructions for the WSD door module.</p>

Faults of safety devices

	Cause of the fault	Fault correction
F.	Display alternates between F and number	
2.0	No safety edge detected.	<p>Check the wiring and condition of the safety edge.</p> <p>Check the DIP switch position in the door leaf box.</p> <p>Check the condition of the safety edge visually and electrically.</p>
2.1	Photocell activated.	<p>Check the condition and alignment of the photocell.</p> <p>Remove obstacles from door area.</p> <p>Clean the photocell and the reflector.</p> <p>Check the connection cable for breaks.</p> <p>Replace photocell if necessary.</p>
2.2	Maximum reversing number reached by actuating the safety edge (only with automatic closing).	<p>Remove obstacles from door area.</p> <p>Check the door mechanism for damage. Check the run of the door in the CLOSE direction.</p> <p>Check whether the safety edge system is correctly functioning.</p> <p>Reset or deactivate menu item P 2.5.</p>
2.4	Safety edge 8k2 is actuated.	<p>Check the safety edge and door leaf boxes for water damage.</p> <p>Check the safety edge visually and electrically.</p>
2.5	Safety edge 8k2 is faulty.	<p>Measure the spiral cable and the safety edge electrically.</p> <p>Check all connection points and pin-and-socket connectors for firm seating.</p>

Faults of safety devices

	Cause of the fault	Fault correction
F.	Display alternates between F and number	
2.6	Safety edge 1k2 is actuated.	<p>Check the pressure-wave switch.</p> <p>Check the sensitivity setting of the pressure-wave switch.</p> <p>Check the spiral cable for mechanical damage and measure it electrically.</p> <p>Check all connection points and pin-and-socket connectors for firm seating.</p>
2.7	Safety edge 1k2 is faulty.	<p>Measure the spiral cable electrically.</p> <p>Check the safety edge and door leaf boxes for water damage.</p>
2.8	Safety edge 1k2 - testing is negative.	<p>Check the setting of the pre-limit.</p> <p>Check the pressure-wave switch.</p> <p>Check the safety edge for damage.</p> <p>Check whether the safety edge is compressed in final limit position CLOSE.</p>
2.9	The optical safety edge is actuated or faulty.	<p>Check whether the rubber profile is squashed.</p> <p>Check transmitter and receiver by replacing them.</p> <p>Check alignment and mechanics.</p> <p>Check the safety edge and door leaf boxes for water damage.</p>

Fault at limit switch

	Cause of the fault	Fault correction
F.	Display alternates between <i>F</i> and number	
3.1	The contact of the emergency manual operation is open or faulty.	Check if the emergency manual operation is activated. Measure the contact of the emergency manual operation electrically.
	The connection cable is faulty.	Check the connection cable for damage. Check plugs for firm seating.
	The thermal contact was activated. The restart protection has tripped.	The drive unit experiences an overload. Check the condition of the door (damage, spring fracture, etc.). Warning! Danger of the door dropping! Stalling may indicate a triggered safety brake. Take appropriate measures. Allow the drive unit to cool. If there is no continuity after cooling, the thermal contact is defective.
	An emergency limit switch has been reached or actuated. The limit switch system has been changed from DES to NES.	Check whether the drive unit was moved into the emergency limit switch range with the emergency manual operation. Check whether the overrun of the drive unit is too long. Check whether the limit switch system has been changed. Reset the door control.
3.2	The emergency limit switch range CLOSE has been reached.	Check whether the drive unit was moved into the emergency limit switch range with the emergency manual operation. Check whether the overrun of the drive unit is too long.
3.4	Incorrect actuation of the pre-limit S5. The pre-limit is not connected, wired incorrectly or faulty.	Check whether a pre-limit is present. Check the wiring. Check the connection cable visually and electrically.
3.5	No limit switch detected (Note: active at initial operation)	Check the connection cable visually and electrically. Check all plugs for firm seating. For TS 970 and TS 959: check the position of the transformer bridge (terminals X 1.5 to X 1.7). Note the supply voltage on site and the chapter "Electrical installation". For TS 970 and TS 971 with NES: Unlock the EMERGENCY STOP command device. Insert a wire link between terminals X 3.1 and X 3.2.
3.6	Incorrect detection of the limit switch system. The limit switch system was changed from DES to NES without resetting the door control.	Check whether the limit switch system has been changed. Reset the door control.

Internal faults of the door control / force monitoring

	Cause of the fault	Fault correction
F.	Display alternates between F and number	
3.7	Internal plausibility error. The mains supply of the door control is incorrect. The voltage fluctuates.	Measure the input voltage. Check the fuses of the supply line. Establish a stable power supply. Measure the voltage under load. Measure the voltage at the motor connector. Establish a stable power supply. Check the connection cable and the plug for firm seating.
3.8	The temperature in the door control is too high.	Measure the ambient temperature and compare it with the permitted temperature range of the door control. Cool the door control by shutting it down.
4.1	Force monitoring triggered.	Check the door mechanism for damage. Check whether a wind load acts on the door. Check the spring tension.
4.5	The crash switch was activated, is defective or not programmed	Check the door curtain for impact damage. Check the crash switch. Check the setting of menu item 3.4. To reset the fault, press the STOP button and hold for 3 seconds.
4.6	Light curtain was activated.	Remove obstacles from door area. Correct the alignment of the light curtain. Clean the optics of the light curtain.
4.7	Testing of the light curtain was unsuccessful. The light curtain is wired incorrectly, incompatible or defective.	Check the wiring of the light curtain. Check the function of the light curtain.
5.0	Fault of the controller.	Switch the door control off and on. Replace the door control if necessary.
5.1	ROM fault.	Switch the door control off and on. Replace the door control if necessary.
5.2	CPU fault.	Switch the door control off and on. Replace the door control if necessary.
5.3	RAM fault.	Switch the door control off and on. Replace the door control if necessary.
5.4	Internal fault. Fault 3.7 was detected five times in a row.	See fault 3.7. Switch the door control off and on. Replace the door control if necessary.

Fault of door movement

	Cause of the fault	Fault correction
F.	Display alternates between <i>F</i> and number	
5.5	Fault of digital limit switch (DES).	<p>Check the limit switch plug for firm seating.</p> <p>Check the connection cable visually for damage.</p> <p>Check the limit switch by replacing it with a properly functioning DES.</p>
5.6	<p>Fault in door movement.</p> <p>The door mechanism is stiff or blocked.</p>	<p>Check door drive unit for stalling.</p> <p>WARNING! Danger of the door dropping! Do not release stalling when using a door drive unit with a safety brake! Stalling may indicate a catch incident. Replace the door drive unit.</p> <p>Check the door mechanism for damage.</p>
	The final limit position OPEN/CLOSE is not reached.	Check final limit position OPEN/CLOSE. When the door hits a cushion, then correct the final limit position.
	A supply phase is missing.	Check the mains supply of the door control. Establish the correct power supply.
	Brake does not release.	Check the brake and rectifier.
	The limit switch is not driven.	Check the limit switch turn while the door is moving.
<p>The running time is set incorrectly.</p> <p>Only for FI-drive: frequency inverter is not detected.</p>	<p>Check and correct the voltage supply of the door control.</p> <p>Correct the running time (menu item 3.3)</p> <p>For single-phase FI drives: Check neutral on the mains supply. Check the transformer bridge at the AC power connector of the door control.</p>	
5.7	The rotating field of the supply network has changed.	Establish a clockwise rotating field at the mains supply.
5.8	Incorrect door movement from idle state.	<p>Drive units with brake release: Check whether the brake release lever has been activated.</p> <p>Warning! Danger of the door dropping! Only qualified personnel may operate the brake release. Follow the instructions for the drive unit.</p>
		<p>Drive units with gear release: Check whether the gearbox is released and the door has been moved by hand. Engage the gearbox and switch the door control off and on.</p>
		Drive units with magnetic brake: brake without function. Check whether the brake is supplied with voltage.
5.9	The door drive unit does not follow the given travel direction.	<p>The brake does not hold the door: check the brake and rectifier for defects, wear or moisture damage.</p> <p>Measure the voltage at the motor plug and check its firm seating. Check the screws on the motor connection.</p>

Fault on the frequency converter

These fault indications appear only for door drive units with a frequency inverter.

	Cause of the fault	Fault correction
F.	Display alternates between <i>F</i> and number	
6.1	The closing speed is too high.	Check the door mechanism for stiffness. Only for doors with counter-balancing: check for spring fracture. Replace door drive unit if necessary.
6.2	Internal communication fault of frequency inverter.	Switch the door control off and on. Check connection cable to limit switch. Check the connection cable and the plug for firm seating. Replace door drive unit if necessary.
6.3	Low voltage in the DC voltage link.	Measure the voltage during door movement. Check mains supply. Change ramp times / speeds. (P 4.1-P 4.9)
6.4	Excess voltage in DC voltage link.	Measure the voltage during door movement. Check mains supply. Change ramp times / speeds. (P 4.1-P 4.9)
6.5	Temperature limit exceeded.	Door drive unit overloaded. Check for excessive ambient temperature. Allow door drive unit to cool and reduce number of cycles.
6.6	Permanent current overload.	Door drive unit overloaded. Check the door mechanism for stiffness.
6.7	Fault of brake / frequency inverter	Check the brake. Replace door drive unit if necessary.
6.9	Collective indication for frequency inverter	Switch the door control off and on. Replace door drive unit if necessary.

Faults when setting the final limit positions

	Cause of the fault	Fault correction
F.	Display alternates between <i>F</i> and number	
8.1	When setting the final limit positions, the travel distance was smaller than the smallest possible.	When resetting the final limit positions, move the door for at least one second before storing the position. Reset door control to factory setting (P 9.5). Notice! All settings will be lost!

11 Maintenance

WARNING

Danger to life from electric shock!

Improper maintenance may result in fatal injury from electrical current.

- Disconnect all cables from the power supply.
- Only allow competent personnel or electricians to carry out the maintenance.
- Secure the mains disconnecter against being switched on or plugged in again.

The electronic components of the door control are maintenance-free. Carry out the following maintenance operations at least once a year:

Component	Procedure
Housing	Use a dry cloth to remove dust and light dirt.
Connecting cables	Check the connecting cables for firm seating and possible damage (e.g. to the insulation). Replace damaged cables.
Fasteners	Check the fasteners for firm seating and damage. Replace damaged parts.
Gaskets	Replace any porous gaskets.
Cable glands	Check the cable glands for firm seating and leak-tightness. Replace damaged cable glands.

12 Disposal

Dispose of packaging

Dispose of the packaging material properly according to the local legal regulations or recycle it.

Dispose of old devices

Dispose of old devices properly according to local legal regulations. Return old devices to the return and collection systems available. You can also return GfA products free of charge. Please apply enough postage to the package and mark it as "old devices".

NOTICE

Environmental damage!

The gearbox contains oil.

- Ensure proper disposal according to local legal regulations.

i NOTE



Old devices marked with the adjacent symbol must not be disposed of with unsorted municipal waste.

13 Characteristic curves of motor protection switches

Siemens 3RV2111-0KA10

SIEMENS

Typ/Model:

3RV2{0;1}110KA{1;2;4}0

I(N): 1,25 A, N-AUSL. /Short-circuit release 16 A

Auslösekennlinie (Toleranz: ±20%)

Deutsch

Tripping characteristic (tolerance: ±20%)

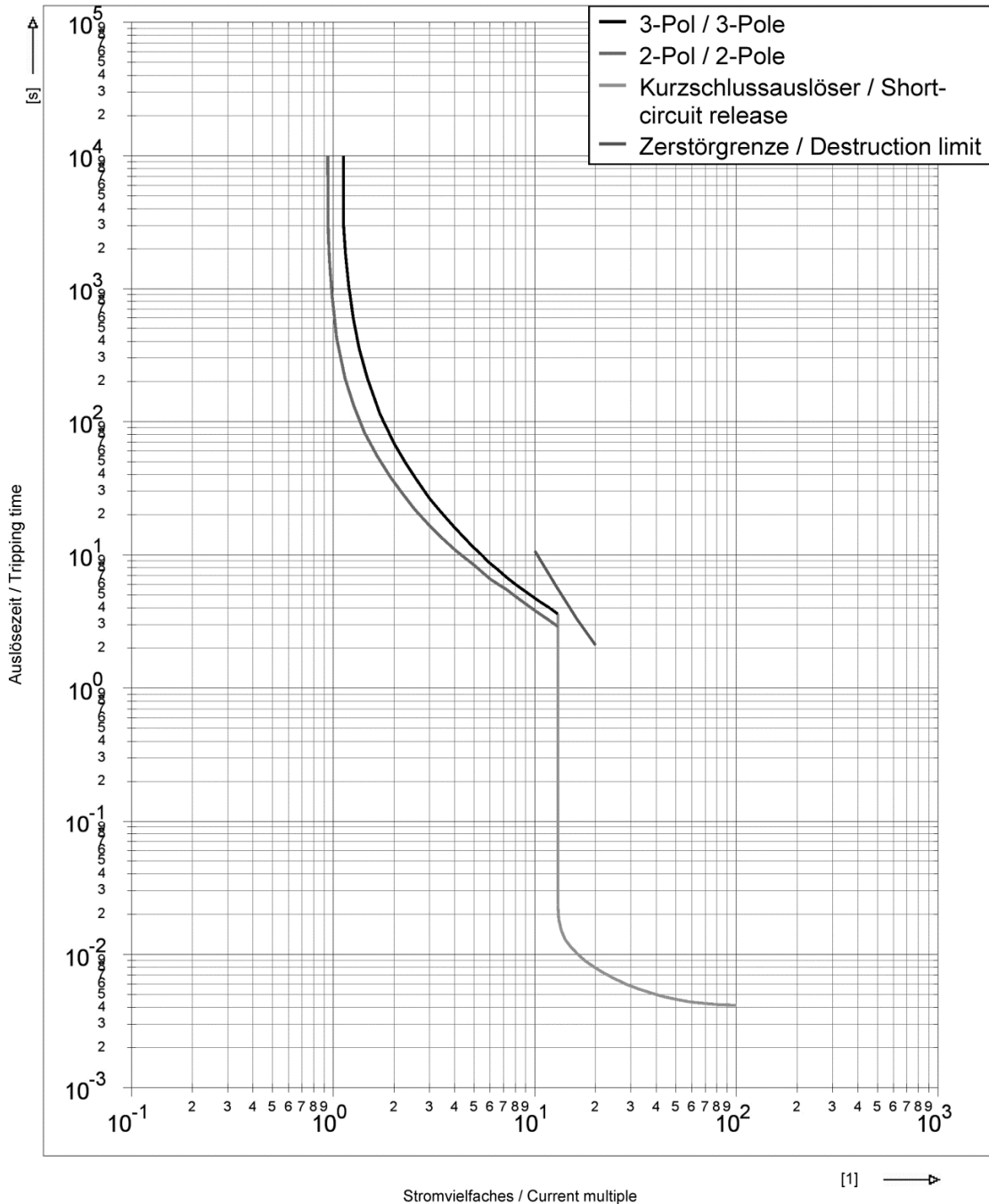
English

Haftungsausschluss:

Der Inhalt des Dokuments wurde auf Richtigkeit und Vollständigkeit geprüft. Dennoch können Abweichungen nicht ausgeschlossen werden, so dass wir für die vollständige Übereinstimmung keine Gewähr übernehmen. Änderungen behalten wir uns jederzeit vor.

Disclaimer of liability:

The content of the document has been carefully reviewed. However, we can not guarantee the accuracy or completeness of the document. We reserved the right to alter at any time.



Zeichnungsnr. / Drawing number:
4 NEP 461 2601 10 000 01

1/1

Datum/Date: 05.10.2009
Last update: 05.10.2009

Siemens 3RV2111-1DA10

SIEMENS

Typ/Model:

3RV2{0;1}111DA{1;2;4}0

I(N): 3,2 A, N-AUSL. /Short-circuit release 42 A

Auslösekennlinie (Toleranz: ±20%)

Deutsch

Tripping characteristic (tolerance: ±20%)

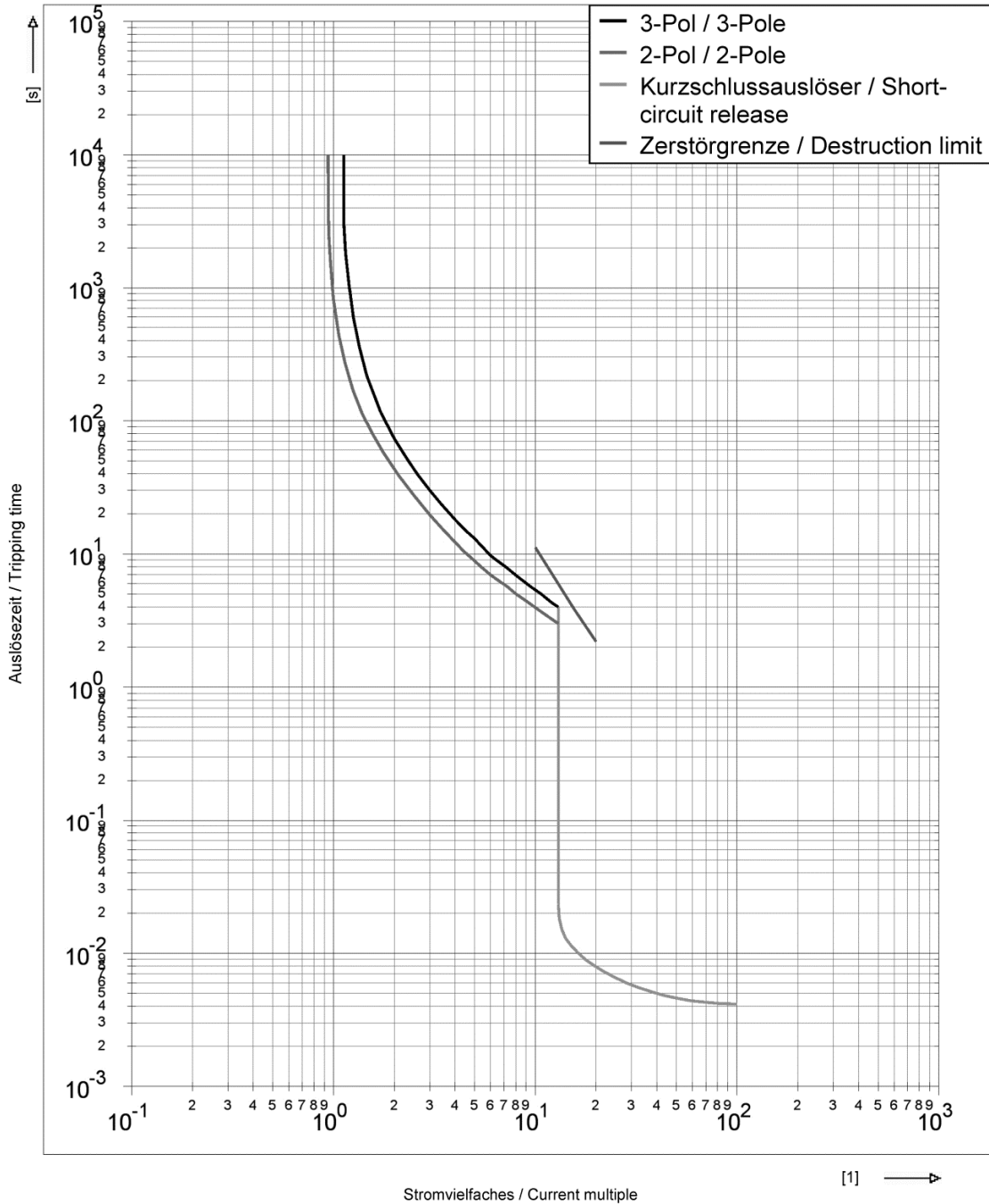
English

Haftungsausschluss:

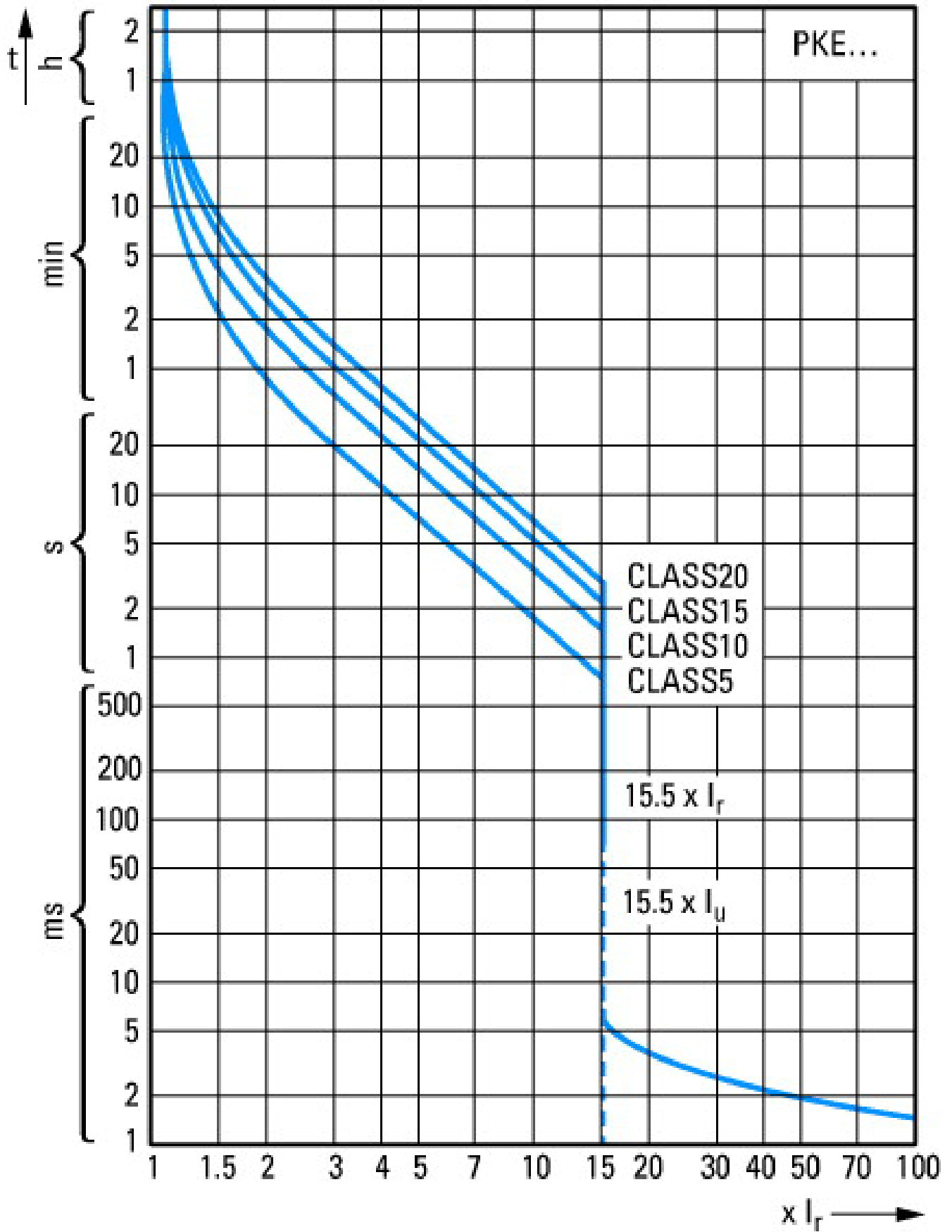
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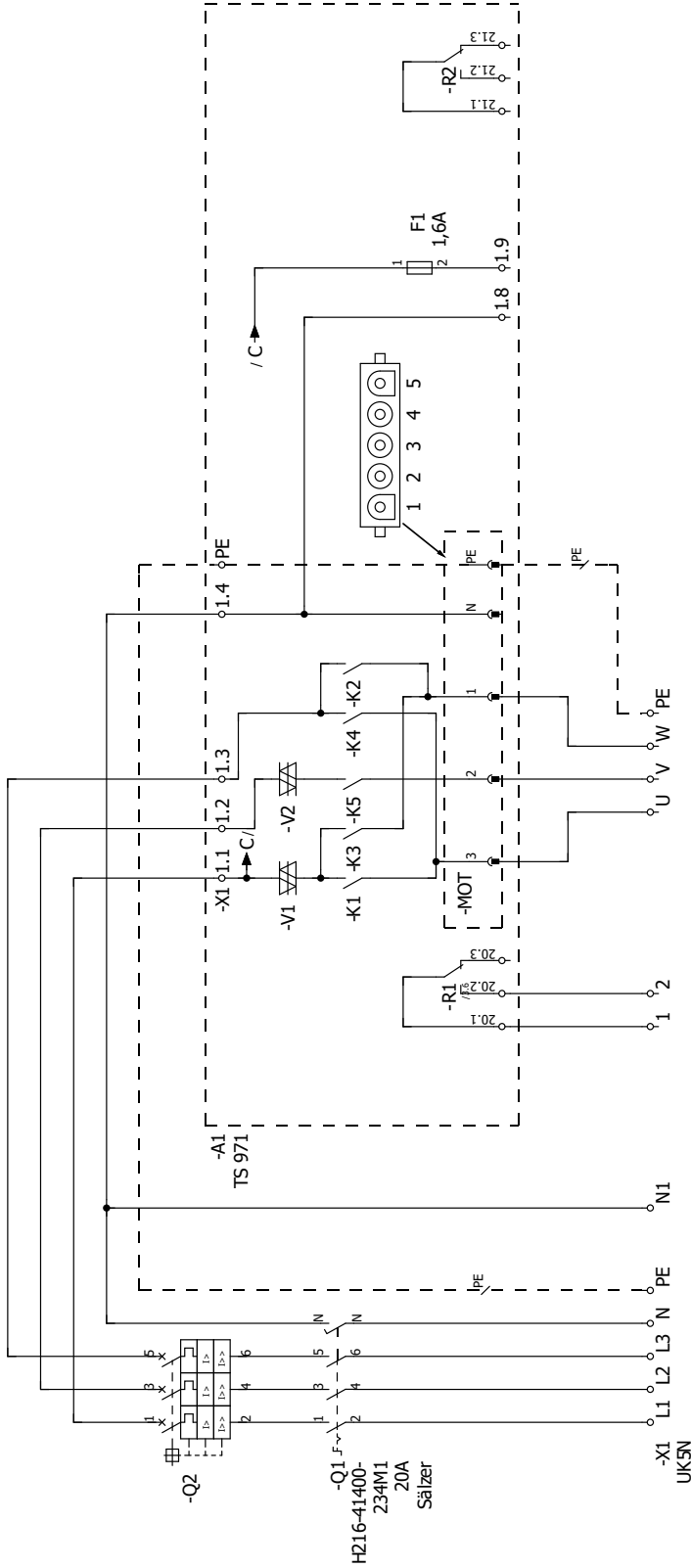


PKE12/XTU-4



14 Circuit diagrams

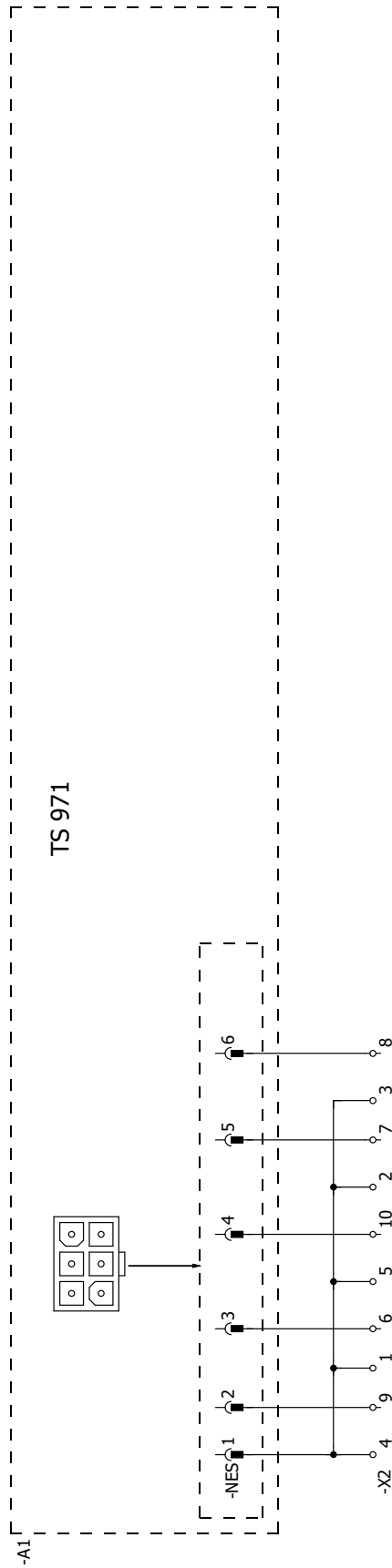
Mains supply / motor connection



M1 [kW]	U [V]	Q2 [A]	Q2 - Typ	setting value [A]
0,37 (no brake)	380 - 440	0,9 - 1,25	3RV2011-0KA10	0,95
0,37 (brake)	380 - 440	0,9 - 1,25	3RV2011-0KA10	1,10
0,75	380 - 440	1,0 - 4,0	PKE12XTU-4	2,00
1,10	380 - 440	1,0 - 4,0	PKE12XTU-4	2,70

-J1 Housing
 C143E-125
 BL-CI
 375x250x188

Limit switch



Declaration of incorporation

within the meaning of Machinery Directive 2006/42/EC
for partly completed machinery, Appendix II Part B



Declaration of conformity

within the meaning of EMC Directive 2014/30/EU
within the meaning of RoHS Directive 2011/65/EU

GfA ELEKTROMATEN GmbH & Co. KG
Wiesenstraße 81 · 40549 Düsseldorf
Germany

We,
GfA ELEKTROMATEN GmbH & Co. KG
declare under our sole responsibility that the
following product complies with the above
directives and is only intended for installation in a
door system.

Door control
TS971 ATEX outside Ex zone

We undertake to transmit in response to a
reasoned request by the appropriate regulatory
authorities the special documents on the partly
completed machinery.

This product must only be put into operation
when it has been determined that the complete
machine/system in which it has been installed
complies with the provisions of the abovementioned
directives.

Authorised representative to compile the
technical documents is the undersigned.

Düsseldorf, 01.07.2023

Stephan Kleine
CEO

Signature

The following requirements from Appendix I of
the Machinery Directive 2006/42/EC are met:

1.1.2, 1.1.3, 1.1.5, 1.2.1, 1.2.2, 1.2.3, 1.2.4.2,
1.2.5, 1.2.6, 1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.3.9,
1.5.1, 1.5.2, 1.5.4, 1.5.5, 1.5.6, 1.5.7, 1.5.8,
1.5.9, 1.5.10, 1.5.11, 1.5.13, 1.6.1, 1.6.2, 1.6.4,
1.7.1.1, 1.7.1.2, 1.7.2, 1.7.3, 1.7.4.3.

Standards applied:

EN 12453:2017+A1:2021

Industrial, commercial and garage doors and
gates - Safety in use of power operated doors -
Requirements

EN 12978:2003+A1:2009

Industrial, commercial and garage doors and
gates - Safety devices for power operated doors
and gates - Requirements and test methods

EN 60335-2-103:2015

Household and similar electrical appliances -
Safety - Part 2-103: Particular requirements for
drives for gates, doors and windows

EN 61000-6-2:2005

Electromagnetic compatibility (EMC) Part 6-2
Generic standards – Immunity standard for
industrial environments

EN 61000-6-3:2007

Electromagnetic compatibility (EMC) Part 6-3
Generic standards – Emission standard for
residential, commercial and light-industrial
environments

60079-11:2012-10

Explosive atmospheres – Part 11: Equipment
protection by intrinsic safety „i“

Declaration of incorporation

within the meaning of Supply of Machinery (Safety) Regulations 2008
for partly completed machinery, Appendix II Part B

Declaration of conformity

within the meaning of Electromagnetic Compatibility Regulations 2016
within the meaning of Restriction of the Use of Certain Hazardous Substances in Electrical
and Electronic Equipment Regulations 2021
within the meaning of Radio Equipment Regulations 2017



We,
GfA ELEKTROMATEN GmbH & Co. KG
declare under our sole responsibility that the
following product complies with the above directives
and is only intended for installation in a door system.

Door control
TS971 ATEX outside Ex zone automatic

We undertake to transmit in response to a reasoned
request by the appropriate regulatory authorities the
special documents on the partly completed
machinery.

This product must only be put into operation when it
has been determined that the complete
machine/system in which it has been installed
complies with the provisions of the above-mentioned
directives.

Authorised representative:
Andrew Collett
GfA ELEKTROMATEN UK Ltd
Tournament Fields Business Park,
Agincourt Rd,
Warwick CV34 6XZ

Düsseldorf, 01.05.2023

Stephan Kleine
CEO

A handwritten signature in black ink, appearing to read 'S. Kleine'.

Signature

The following requirements from Appendix I of the
Supply Machinery (Safety) Regulations 2008 are
met:

1.1.2, 1.1.3, 1.1.5, 1.2.2, 1.2.3, 1.2.6, 1.3.2, 1.3.3,
1.3.9, 1.5.1, 1.5.2, 1.5.4, 1.5.6, 1.5.7, 1.5.8, 1.5.9,
1.5.10, 1.5.11, 1.5.13, 1.6.1, 1.6.2, 1.6.4, 1.7.2, 1.7.3,
1.7.4.3.

Applied Standards:

BS EN 12453:2022

Industrial, commercial and garage doors and gates -
Safety in use of power operated doors -
Requirements

BS EN 12978:2003+A1:2009

Industrial, commercial and garage doors and
gates - Safety devices for power operated doors
and gates - Requirements and test methods

BS EN 60335-2-103:2015

Household and similar electrical appliances -
Safety - Part 2-103: Particular requirements for
drives for gates, doors and windows

BS EN 61000-6-2:2005

Electromagnetic compatibility (EMC) Part 6-2
Generic standards – Immunity standard for
industrial environments

BS EN 61000-6-3:2007

Electromagnetic compatibility (EMC) Part 6-3
Generic standards – Emission standard for
residential, commercial and light-industrial
environments

BS EN 60079-11:2012-10

Explosive atmosphere – Part 11: Device protection by
intrinsic safety “I”